beverages

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*Editorial*

# Beverage Sensory Modification

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The Special Issue on "Beverage Sensory Modification" gathers a series of articles that feature the broad sense of sensory modification, either by improving flavor, taste, and mouthfeel properties or by preventing their spoilage. The scope goes further than the usual technological measures that modulate sensory properties and includes the psychological and cross-modal influences, where the sensory modification is on the subject's brain and not on the object's physical-chemical properties.

The beverage industry usually addresses the question of modifying sensory characteristics by meeting the innate attraction for sweetness either by adding different sweetening agents, different aroma molecules, or changing dishware forms, which are known to increase the in-mouth sweet perception. Non-nutritive sweeteners have been used as substitutes for nutritive sweeteners with the goal of preventing obesity and dental caries. The main factor responsible for the difference in taste between beverages containing a nutritive sweetener and those containing a non-nutritive sweetener is the temporal profile of sensory attributes. However, Gotow et al. [1] demonstrated that this difference was only observed in water and not in coffee beverages, probably because of flavor properties that masked the sweetener effect. The cross-modal flavor–taste interactions also revealed the importance of the matrix effect as described by Wang et al. [2] using skim milk. These authors showed that a vanilla aroma did enhance the perceived sweetness while this enhancing effect was lower than that of sucrose on the vanilla flavor. The cross-modal interactions also include visual and taste senses. In particular, research indicates that roundness (as opposed to angularity) is consistently associated with an increased sweetness perception. However, Machiels [3] did not confirm these results using two different cup forms (round versus angular) with a butter milk drink and a mate-based soft drink. Interestingly, a correspondence was found between the angular cup and a more bitter taste only for the soft drink. The sweetener sucrose may also be used for other purposes than increasing sweetness [4]. These authors showed that it also affects the texture and creaminess of a new product based on partially demineralized sweet whey and gelatin added to milk powder and cassava starch. Creaminess and firmness were also promoted by the cassava starch. Overall, these four articles highlight that food or beverage matrixes exert a significant effect on taste and mouth-feel studies and are indispensable to validate preliminary assessments using water solutions.

Wines are also a frequent object of sensory studies, gathering researchers with different scientific backgrounds. The shape and size of the wine glass was shown to affect the different wine aromas in the headspace [5] Moreover, Spence and Wang [6] demonstrated that the quality of the wine was rated as higher and the celebratory mood of the participant was also higher following the sound of the cork pop when compared with a screw-cap opening. The cross-modal interaction received here of another input from the senses of hearing, smell, and taste influences hedonic responses. Under a different scope, off-flavors also deserve the attention of researchers. For instance, the world-famous Chardonnay from Burgundy may be affected by oxidative notes that indicate premature aging [7] The highly debated "horse sweat" taint was also reviewed, encompassing technical preventive measures and the influence of volatile phenols on sensory attributes [8].

This special issue enables consumers to be aware of the work that is being carried out by leading research teams in areas that may be regarded as case studies for the whole of the food and beverage industries.

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